CIVIL QUALITY CONSULTANTS & ENGINEERS

(Buildings Geo-Tech & Highway Materials Testing Laboratory)
An ISO 9001: 2015 Certified Company
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JAS-ANZ
ISO 9001:2000 CERTIFIED

Job No.: CQCE/BBMP/MY/W.No.12/2019-20 Date 01.08.2019

FIELD DENSITY TEST BY SAND REPLACEMENT METHOD
(IS : 2720 - Part 28)

Client : **Executive Engineer,** Dasarahalli Zone, BBMP, Bangalore.

Agency : **Sri. M. Yogesh (Professional global infrastructure privited limited),** Bangalore.

Name of work : Restoration of road cut portion done by BWSSB (For water line and sanitary Line) in Shettyhalli old village area in ward no.12, Shettyhalli Sub Division , BBMP, Bangalore.

Date of Testing : 31.07.2019 to 01.08.2019

Material Source : Wet Mix Macadam

Max.Dry Density g/cc	2.27
Optium Moisture Content (%)	7.26
Bulk Density of Sand g/cc(ys)	1.35 g/cc
Wt. of Sand in Cone gms	335 grams

DETERMINATION OF WET DENSITY	
Test Holes No's	1
Offset from centre of alignment & chainage	Shettyhalli old Village
Wt of the Moist soil from excavated hole = W	1983
Wt.of Cylinder+Sand before pouring (gm) (w1)	6800
Wt.of Sand in the cone (gm) (w2)	335
Wt.of the Cylinder and sandfilling the excavated hole (w4)	5289
Wt of the sand in the excavated hole wb=w1-w4-w2	1176
Volume of Sand in Hole = (v=wb/Ys)=cm^3	871.11
Insitu Bulk density Wet excavated soil Y=w/v	2.28
Moisture Content (%)	
DETERMINATION OF DRY DENSITY	
Field dry Density (g/cc)	2.28
Field compaction achieved (%)	100.28
Required Compaction (%)	98

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Job No.: CQCE/BBMP/MY/W.No.12/2019-20 Date: 07.08.2019

Aggregate Impact Value

IS: 2386 Part IV

Client	**Executive Engineer,** Dasarahalli Zone, BBMP, Bangalore.
Agency	**Sri. M. Yogesh (Professional global infrastructure privited limited),** Bangalore.
Name of the Work	Restoration of road cut portion done by BWSSB (For water line and sanitary Line) in Shettyhalli old village area in ward no.12, Shettyhalli Sub Division , BBMP, Bangalore.
Source / Location	Hot Mix Plant, Bangalore
Type of Mix	Semi Dense Bituminous Concrete
Date of Testing	07.08.2019

Sl No.	Details	Trial No.			Average
		1	2	3	
1	Total weight of aggregate sample filling the cylindrical measure = W_1 g	380	382	383	
2	Weight of agregate passing 2.36 mm sieve after the test = W_2 g	85	85.5	87	
3	Weight of aggregate retained 2.36 mm sieve after the test = W_3 g	295	296.5	296	
4	Aggregate Impact value = percent fines	22.37	22.38	22.72	
	100* (W_2/W_1)%				22.49

Comments:

→ Maximum allowable Aggregate Impact value for Semi Dense Bituminous Concrete is 27%

Note:

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Þ The results indicated above are based on the tests carried out on the samples received in the laboratory

Þ Any Query regarding the report must be reported within 30 days from the date of testing

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Job No.: CQCE/BBMP/MY/W.No.12/2019-20 Date: 07.08.2019

DETERMINATION OF FLAKINESS INDEX & ELONGATION INDEX OF COARSE AGGREGATES

Client	**Executive Engineer,** Dasarahalli Zone, BBMP, Bangalore.
Agency	**Sri. M. Yogesh (Professional global infrastructure privited limited),** Bangalore.
Name of Work	Restoration of road cut portion done by BWSSB (For water line and sanitary Line) in Shettyhalli old village area in ward no.12, Shettyhalli Sub Division , BBMP, Bangalore.
Technical Reference	IS 2386(Part 1) 1963 (RA 2007)
Type of Mix	Semi Dense Bituminous Concrete
Date of Testing	07.08.2019

Result : Flakiness Index = **12.36%**

Elongation Index = **13.68%**

Result : Combined Flakiness & Elongation index **26.04%**

Comments:

→ Maximum allowable Flakiness & Elongation Index for Semi Dense Bituminous Concrete is 30%

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No.: CQCE/BBMP/MY/W.No.12/2019-20

07.08.2019

Specific Gravity And Water Absorption Test

IS: 2386 Part III

Client	**Executive Engineer,** Dasarahalli Zone, BBMP, Bangalore.
Agency	**Sri. M. Yogesh (Professional global infrastructure privited limited),** Bangalore.
Name of the Work	Restoration of road cut portion done by BWSSB (For water line and sanitary Line) in Shettyhalli old village area in ward no.12, Shettyhalli Sub Division , BBMP, Bangalore.
Type of Mix	Semi Dense Bituminous Concrete
Source / Location	Hotmix Plant, Bangalore
Date of Testing	07.08.2019

Sl. No.	Details	Notation	Test Number			Mean Value
			Test 1	Test 2	Test 3	
1	Weight of aggregate suspended in water with the basket	W_1 g	2021	2023	2025	
2	Weight of basket suspended in water	W_2 g	755	755	755	
3	Weight of saturated aggregate in water	$(W_1 - W_2) = W_s$ g	1266	1268	1270	
4	Weight of saturated surface dry aggregate in air	W_3 g	2015	2017	2019	
5	Weight of water equal to the volume of the aggregate	$(W_3 - W_S)$ g	749	749	749	
6	Weight of oven dried aggregate	W_4 g	2009	2010	2011	
7	Specific Gravity	$W_4/(W_3-W_S)$	2.682	2.684	2.685	2.684
8	Apparent Specific gravity	$W_4/(W_4-W_S)$	2.704	2.709	2.714	2.709
9	Water Absorption	$((W_3-W_4)*100)/W_4$	0.30%	0.35%	0.40%	0.35%

Comments:

→ Maximum allowable Aggregate Water absorption value for Semi Dense Bituminous Concrete is 2.0%

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Aggregate Gradation Test

IS : 2386 Part I

Client	**Executive Engineer,** Dasarahalli Zone, BBMP, Bangalore.
Agency	**Sri. M. Yogesh (Professional global infrastructure privited limited),** Bangalore.
Name of theWork	Restoration of road cut portion done by BWSSB (For water line and sanitary Line) in Shettyhalli old village area in ward no.12, Shettyhalli Sub Division , BBMP, Bangalore.
Sample I / D	Hot Mix Plant, Bangalore
Type of Mix	Semi Dense Bituminous Concrete
Date of Testing	08.08.2019

Total Weight of Sample: **5270** gm

SIEVE SIZE, mm	Weight Retained, gm	% Retained	Cummulative % Retained	% Passing	JOBMIX Gradation as per MORTH	Remarks
19	0	0	0	100	100	Gradation satisfies Semi Dense Bituminous concrete Grade-II specification as per MORTH
13.2	730	13.85	13.85	86.15	79 - 100	
9.5	428	8.12	21.97	78.03	70 - 88	
4.75	610	11.57	33.55	66.45	53 - 71	
2.36	436	8.27	41.82	58.18	42 - 58	
1.18	558	10.59	52.41	47.59	34 - 48	
0.600	485	9.20	61.61	38.39	26 - 38	
0.300	736	13.97	75.58	24.42	18 - 28	
0.150	369	7.00	82.58	17.42	12 - 20	
0.075	398	7.55	90.13	9.87	4 - 10	

Total Weight of Sample: **5250** gm

SIEVE SIZE, mm	Weight Retained, gm	% Retained	Cummulative % Retained	% Passing	JOBMIX Gradation as per MORTH	Remarks
19	0	0	0	100	100	Gradation satisfies Semi Dense Bituminous concrete Grade-II specification as per MORTH
13.2	522	9.94	9.94	90.06	79 - 100	
9.5	633	12.06	22.00	78.00	70 - 88	
4.75	568	10.82	32.82	67.18	53 - 71	
2.36	638	12.15	44.97	55.03	42 - 58	
1.18	559	10.65	55.62	44.38	34 - 48	
0.600	622	11.85	67.47	32.53	26 - 38	
0.300	733	13.96	81.43	18.57	18 - 28	
0.150	305	5.81	87.24	12.76	12 - 20	
0.075	326	6.21	93.45	6.55	4 - 10	

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